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Externality of stock liquidity to the cost of borrowing

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Abstract

The paper investigates whether stock liquidity of firms is valued by lending banks revealing that firms with higher liquidity in the capital market pay lower spreads for the loans they obtain. This relationship is causal as evidenced by using the decimalization of tick size as an exogenous shock to stock liquidity in a difference-in-differences setting. Reduction in financial constraint and improvement in corporate governance induced by higher stock liquidity are potential mechanisms through which liquidity impacts loan spreads. These higher liquidity firms also receive less stringent non-price loan terms, e.g., longer loan maturity and less required collateral.

Key Words: Stock liquidity; Cost of bank loans

JEL Classification: G12; G21

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1. Introduction

A significant amount of activities in the financial markets occur in the secondary markets (Bond, Edmans, and Goldstein 2012). A growing body of literature has examined the effects of various secondary market characteristics on these activities. One important secondary market characteristic that has attracted a lot of attention in the literature is stock liquidity, i.e., the ease of trading a stock in the stock markets. Recent studies show that stock liquidity increases firm value (Fang, Noe, and Tice 2009; Bharath, Jayaraman, and Nagar 2013). Such an increase in firm value induced by high stock liquidity is likely to benefit all stakeholders of the firm, including creditors of the firm. However, a firm with higher stock liquidity could also be more vulnerable to hostile takeovers (see, e.g., Kyle and Vila 1991). The increased vulnerability to hostile takeovers could cause creditors to be concerned about the potential increase in the post-takeover financial leverage. To understand whether creditors pay attention to these effects related to stock liquidity and how they consider such liquidity during loan contracting, we conduct an empirical investigation of the relation between stock liquidity and bank loan contracting terms.

We focus on bank loans to study the stock liquidity effect on creditors because bank loans are one of the most important sources of external financing (Bharath, Sunder, and Sunder 2008; Houston and James 1996). It also has been documented that bank loans dominate corporate bonds and seasoned equity in corporate external financing over the past two decades (Bharath, Sunder, and Sunder 2008; Denis and Mihov 2003; Graham, Li, and Qiu 2008). Further, banks not only actively produce private information about borrowers but also actively monitor borrowers compared to other dispersed "arm's length" debtholders such as public bondholders, since banks are less likely to suffer a free-rider problem (see, e.g., Diamond 1984; Fama 1985). This nature of active involvement suggests that banks are more likely to consider various aspects of borrower

stock liquidity in the pricing and the terms of bank loans. From this perspective, bank loans provide an ideal setting to investigate how lenders perceive and react to the stock liquidity of their borrowers.

There are two opposing views on the relation between stock liquidity and the cost of bank loans. The positive view suggests that higher stock liquidity may reduce the cost of loans for two reasons. First, higher stock liquidity enables a firm to raise capital at a lower cost from external equity financing (Baker and Stein 2004; Butler, Grullon, and Weston 2005). A cheaper access to external equity could relax the firm's financial constraints and reduce the probability of default. It could also enhance the firm's bargaining power in its negotiation with banks on loan prices and terms. Consequently, a firm with higher stock liquidity could obtain a lower cost of bank loans. Second, higher stock liquidity can improve corporate governance (Admati and Pfleiderer 2009; Edmans and Manso 2011; Maug 1998) and result in better firm performance (Bharath, Jayaraman, and Nagar 2013; Fang, Noe, and Tice 2009). The probability of default is likely to be lower for firms with better performance, so that banks could offer credit to these firms (with higher stock liquidity) at favorable prices and terms.

On the other hand, the negative view suggests that stock liquidity may increase the cost of bank loans. As we discussed earlier, higher stock liquidity increases a firm's vulnerability to hostile takeovers. When a hostile takeover happens, the target firm's financial leverage could increase significantly (Cremers and Nair 2005; Ghosh and Jain 2000). The increased takeover pressure from hostile takeovers could also induce managers to sacrifice long-term performance for inefficient but immediate profits in their investment decisions (Stein 1988, 1989).[1] If banks

[1] Myopic investments could also occur because high stock liquidity pressures a firm's managers to meet short-term earnings targets set by short-term institutional investors.

anticipate such potential increases in financial leverage and myopic investments from the firms with high stock liquidity, they could demand a premium for the loans lent to these firms.

To see which view dominates, we empirically investigate the effect of a borrower's stock liquidity on the cost of its bank loans. We examine a broad sample of 16,546 loans issued to publicly traded U.S. firms between 1994 and 2010. The results offer strong support on the positive view: stock liquidity reduces the cost of bank loans. In particular, we find that firms with higher stock liquidity have significantly lower all-in-drawn spreads, defined as the basis points a borrower pays in excess of the London Interbank Offered Rate (LIBOR) or LIBOR equivalent for each dollar drawn down. The results are economically meaningful as well. For example, a one-standard-deviation increase in our relative effective spread variable, one of our stock liquidity variables, leads to a reduction in loan spread by 10.85 basis points for an average firm in our sample. Our findings are also robust to the other measures of stock liquidity.

One concern in the interpretation of the results above is the potential issue of endogeneity. It is possible that some omitted variables could affect both stock liquidity and the cost of bank loans. We address this endogeneity concern by using several econometric techniques. First, we control for firm fixed effects in the regressions to control for any firm-specific time-invariant omitted variables that could affect the relation between stock liquidity and loan spread. Second, we use an instrumental variables (IV) approach to alleviate the concern that the omitted variables are time-varying. We follow Fang, Noe, and Tice (2009) by using stock liquidity of industry peers as an instrument for firm stock liquidity. We find that the relation between stock liquidity and bank loan spread is robust to both the control of firm fixed effects and the instrumental variables approach.

Third, we utilize the decimalization of tick size in the U.S. stock markets surrounding 2001 as an exogenous shock to firm stock liquidity to address the endogeneity and causality concerns related to firm stock liquidity (Chordia, Roll, and Subrahmanyam 2008; Fang, Tian, and Tice 2014). Decimalization is a suitable exogenous shock to stock liquidity because it is unlikely that decimalization could directly affect the cost of bank loans or vice versa. In particular, we employ a difference-in-differences method to examine the change in loan pricing terms in response to the change in firm stock liquidity induced by decimalization. We find that a firm experiencing a larger increase in stock liquidity due to decimalization has a lower bank loan spread than a firm with a smaller increase in stock liquidity. This finding provides causal evidence that a borrower's stock liquidity reduces the cost of its bank loans.

In the latter part of the paper, we further investigate the potential mechanisms through which high stock liquidity reduces the cost of bank loans. As we discussed earlier about the positive view in the literature, high stock liquidity could help relax a firm's financial constraints, thereby reducing the firm's cost of bank loans. This financial constraint mechanism predicts that the negative effect of stock liquidity on bank loan spread is stronger for financially constrained firms than for financially unconstrained firms. It is also possible that higher stock liquidity of a borrower could improve corporate governance, increase firm performance, and thus, reduce its default risk. In this paper, we study this corporate governance mechanism from the perspective of CEO's pay-for-performance sensitivity.[2] Jayaraman and Milbourn (2012) show that stock liquidity increases CEO's pay-for-performance sensitivity. Thus, the corporate governance mechanism

[2] Stock liquidity could also affect governance through institutional investor monitoring. Some studies suggest that stock liquidity can improve the incentive for institutional investors to monitor (see, e.g., Kahn and Winton 1998; Maug 1998; Noe 2002; Edmans 2009). However, higher stock liquidity could also allow institutional investors to exit their investments with a lower cost. If so, institutional investors could have less incentive to monitor (Edmans and Manso (2011). Considering the ambiguity of the impact of stock liquidity on monitoring, we choose not to study the governance mechanism from the perspective of institutional investor monitoring.

predicts that the negative relation between stock liquidity and bank loan spread is stronger for firms with greater performance-sensitive managerial compensation. Our findings support the predictions from both the financial constraint and corporate governance mechanisms.

We further examine the negative view as discussed earlier. According to the negative view, banks could increase the cost of bank loans for firms with high stock liquidity since banks could be concerned about the increased takeover threats associated with the high stock liquidity. Firms incorporated in the state of Delaware have a higher exposure to takeover threats. Thus, we hypothesize that the effect of high firm stock liquidity in reducing bank loan spread is weakened for firms facing greater takeover threats, such as firms incorporated in the state of Delaware. However, we find no evidence supporting this hypothesis.

Finally, we also examine whether stock liquidity affects the non-price terms of loan contracts. We find that loans issued to borrowers with higher stock liquidity have significantly longer maturity and are less likely to be secured by collateral. These findings suggest that stock liquidity affects both the pricing and non-pricing terms of bank loans.

Our paper makes important contributions to two streams of literature. First, our paper adds to the debt contracting literature by providing causal evidence that stock liquidity affects the cost of bank loans. Our results complement the studies by Bhojraj and Sengupta (2003) and Roberts and Yuan (2010) who find that strong corporate governance reduces the cost of debt. Specifically, Bhojraj and Sengupta (2003) find that firms with greater institutional ownership and stronger control of the board by outsiders have a lower cost of public bond. Roberts and Yuan (2010) find that a similar negative relationship exists between institutional ownership and the cost of bank loans. Different from these studies, our paper shows that the increased pay-for-performance

sensitivity associated with higher stock liquidity could induce creditors to reduce the cost of bank loans.

Second, our paper contributes to the growing body of literature on how stock liquidity affects firm decisions and firm value. For instance, studies have shown that firms with higher stock liquidity have higher firm value (Bharath, Jayaraman, and Nagar 2013; Fang, Noe, and Tice 2009), less innovation (Fang, Tian, and Tice 2014), lower cost of issuing equity (Butler, Grullon, and Weston 2005), lower likelihood to pay dividends (Banerjee, Gatchev, and Spindt 2007), and stronger corporate governance (Edmans, Fang, and Zur 2013). Our study extends this literature by showing that firms with higher stock liquidity also have lower costs of one of the major external financing sources – bank debt financing.

The remainder of the paper is structured as follows. Section 2 discusses the related literature. Section 3 discusses sample selection and variable construction. Section 4 presents empirical evidence on the relation between a firm's stock liquidity and the cost of its bank loans. Section 5 addresses the endogeneity concerns. Section 6 studies the potential channels through which stock liquidity affects loan spread. Section 7 investigates the impact of stock liquidity on non-price loan terms such as loan maturity and collateral requirements. Section 8 concludes.

2. Related Literature

In this section, we discuss two different views in the literature on how a firm's stock liquidity affects the cost of its bank loans. In Section 2.1, we discuss the positive view that stock liquidity reduces loan costs. In Section 2.2, we discuss the negative view that stock liquidity increases loan costs.

2.1. Positive View on Stock Liquidity and Loan Costs

The positive view suggests that higher stock liquidity of a firm may reduce the cost of its bank loans. There are two potential mechanisms. First, higher stock liquidity enables a firm to obtain new external capital at lower costs from public sources. For example, Baker and Stein (2004) show that firms with higher stock liquidity are more likely to issue equity. Butler, Grullon, and Weston (2005) show that higher stock liquidity reduces the cost of raising capital through seasoned equity.[3] The access to relatively cheap external equity financing could help relax the firm's financial constraint and reduce its default risk. Consequently, banks would reduce the cost of bank loans lent to the firm with high stock liquidity.

The access to cheap external equity financing could also help reduce the bargaining power of banks. Sharpe (1990) and Rajan (1992) suggest that banks could exploit the private information they gather about borrowers and hold borrowers up for high interest rates. A substantial amount of empirical evidence confirms that banks do exploit their "information monopoly" when contracting with borrowers (Houston and James 1996; Santos and Winton 2008; Hale and Santos 2009; Schenone 2010). However, when a firm has high stock liquidity, it can use the low cost of external equity financing as a bargaining tool to negotiate with banks and obtain favorable loan prices and terms.

Second, high stock liquidity can facilitate effective corporate governance. Maug (1998) shows that high stock liquidity could motivate blockholders to monitor. This is because prices of liquid stocks incorporate the positive monitoring effect more quickly and accurately, thereby enabling blockholders to earn trading gains from the price appreciation induced by monitoring. In addition, Admati and Pfleiderer (2009), Edmans (2009), and Edmans and Manso (2011) argue that

[3] Butler and Wan (2010) also show that stock liquidity is negatively related to the cost of public bond issuances.

even if blockholders are not able to intervene by monitoring, high stock liquidity can still help discipline management. This happens because blockholders can vote with their feet and exit their investments in liquidity stocks easily and cheaply (see, e.g., Edmans, Fang, and Zur 2013; Bharath, Jayaraman, and Nagar 2013). Finally, high stock liquidity could also improve corporate governance by increasing CEO's pay-for-performance sensitivity (Jayaraman and Milbourn 2012). Under all these possibilities, firm operating performance will improve and the probability of default will decrease. Consequently, bank lenders could offer the firms with higher stock liquidity favorable terms when lending to these firms.

2.2. Negative View on Stock Liquidity and Loan Costs

The negative view suggests that higher stock liquidity of a firm could increase the cost of its bank loans since a firm with higher stock liquidity is more vulnerable to hostile takeovers. Prior studies have shown that target firms often experience a significant increase in financial leverage after being acquired in hostile takeovers (see, e.g., Ghosh and Jain 2000; Cremers and Nair 2005). Chava, Livdan, and Purnanandam (2009) further show that the potential increase in financial leverage could cause banks to charge a higher loan spread to firms with higher takeover vulnerability. Hence, if firms with higher stock liquidity are more exposed to hostile takeover threats, banks could increase the cost of loans lent to these firms.

The high takeover pressure caused by high stock liquidity could also induce myopic investment. In particular, in the presence of increased takeover pressure, managers may choose to chase short-term performance and invest in a way that benefits shareholders in the short run but destroy long-term shareholder value. For instance, Fang, Tian, and Tice (2014) find that managers of firms with higher stock liquidity reduce investments in innovations due to the increased takeover pressure caused by the higher stock liquidity. Thus, if banks are concerned about the possibility of

myopic investments and the cost associated with such investments, they could charge a higher spread on the loans borrowed by the firms with higher stock liquidity.

3. Sample Construction and Variable Definition

In this section, we discuss sample construction and variable definition. In Section 3.1, we discuss the sample selection procedure. In Sections 3.3 and 3.3, we discuss the definition of the bank loan and stock liquidity variables, respectively. In Section 3.4, we discuss the definition of the other variables. In Section 3.5, we discuss the descriptive statistics of our variables.

3.1. Data Sources and Sample Selection

The bank loan data are collected from the Dealscan database provided by Loan Pricing Corporation (LPC). We obtain detailed facility level information on all loans made to U.S. corporations. We construct the stock liquidity variables using intraday trades and quotes from the Trade and Quote (TAQ) database and daily trading information from the Center for Research in Security Prices (CRSP) database. We also collect financial data from the Compustat database and institutional holdings data from the Thomson Reuters Institutional (13F) Holdings. We further follow the matching algorithm developed by Chava and Roberts (2008) to match the facility-level Dealscan loan data to other databases.

While the data on loans in Dealscan are available from 1985, the intraday trading information in the TAQ database is available only from 1993. Hence, our final sample covers a period from 1994 to 2010. Following Fang, Noe, and Tice (2009), we retain only firms with their stocks traded on the New York Stock Exchange (NYSE), the American Stock Exchange (AMEX), or the Nasdaq. We exclude all financial firms with SIC codes between 6000 and 6999. We also

exclude observations with missing values on key control variables. Our final sample consists of 16,546 facility-year observations from 3,281 unique firms.

3.2. Bank Loan Variables

The key variable in our study is the cost of bank loans. We measure the cost of bank loans by all-in-drawn spread (*AISD*). *AISD* is the amount that a firm pays per dollar drawn down in basis points over *LIBOR* for a loan. It adds the spread of the loan with any annual or facility fee paid to the bank.

We also construct various variables on loan characteristics. In particular, we calculate loan maturity (*Loan maturity*) as the maturity of loan in months and a dummy variable of collateral requirements (*Secured*) equals one if a loan facility is secured by collateral and zero otherwise.

Finally, we calculate loan size (*Loan size*) as the amount of loan in millions USD and a dummy variable of performance pricing (*Performance pricing*) provisions equals to one if a loan has performance pricing provisions and zero otherwise.

3.3. Stock Liquidity Variables

We use three variables for stock liquidity. The first and primary variable of stock liquidity is relative effective spread (*RES*), defined for each stock as the ratio of the absolute value of the difference between trade execution price and the midpoint of the prevailing bid-ask quote to the midpoint of the prevailing bid-ask quote. This variable is constructed using the intraday trading data from the TAQ database and is used widely in the market microstructure literature to measure stock liquidity (see, e.g., Hasbrouck 2009; Goyenko, Holden, and Trzcinka 2009). In particular, for every stock, we first calculate relative effective spread for each matched quote/trade for every trading day in the firm's fiscal year as described in Chordia, Roll, and Subrahmanyam (2001) and

Fang, Noe, and Tice (2009). Daily relative effective spread is then computed as the arithmetic average of the relative effective spread of all matched quote/trade in each trading day. Next, we compute monthly relative effective spread as the arithmetic mean of the daily relative effective spread over all the trading days in a month. Finally, annual relative effective spread is calculated as the average of the monthly relative effective spread over all the months in a firm's fiscal year.

The second stock liquidity variable we use is Amihud's (2002) illiquidity ratio (*AMIHUD*), defined as the arithmetic mean of the daily ratio of the absolute value of stock returns to trading volume in dollar terms over all positive-volume days in a fiscal year. This measure is constructed using the daily trading data from CRSP. It captures the transaction cost per unit of trading volume.

The third variable of stock liquidity is the one proposed by Fong, Holden, and Trzcinka (2014; FHT):

$$FHT_{i,t} = 2 * Sigma * \Phi^{-1}(\frac{1+Zeros}{2}) \quad (1)$$

where *i* indexes for each firm and *t* indexes for each fiscal year. *Sigma* is the standard deviation of daily returns calculated over fiscal year *t*. Φ is the cumulative normal distribution. *Zeros* is the proportion of zero returns, calculated as the ratio of the number of zero-return days to the number of total trading days in fiscal year *t*. *FHT* is computed using the daily trading data from CRSP.

We further take the natural logarithm of (one plus) each of the above three stock liquidity variables to adjust for skewness observed in these variables. We also multiply each stock liquidity variable by –1 to ease interpretation. Thus, the three stock liquidity variables we use in the following tests are *LIQRES* = –ln(1+*RES*), *LIQAMIHUD* = –ln(1+*AMIHUD*), and *LIQFHT* = –ln(1+*FHT*). A higher value of *LIQRES*, *LIQAMIHUD*, or *LIQFHT* indicates a higher level of stock liquidity.

3.4. Other Variables

Finally, we calculate variables on firm characteristics. In particular, firm size (*Log(Assets)*) is the log of the book value of assets. Market-to-book ratio (*Market-to-book*) is the ratio of the market value to the book value of assets where the market value of assets is the book value of assets minus the book value of equity plus the market value of equity. Leverage (*Leverage*) is the ratio of total liabilities to the book value of assets. Return on assets (*ROA*) is the ratio of operating income before depreciation and amortization (EBITDA) to the book value of assets. Tangibility (*Tangibility*) is the ratio of net property, plant, and equipment (PPE) to the book value of assets. Interest coverage ratio (*Interest coverage*) is the log of one plus the ratio of EBITDA to interest expenses. Current ratio (*Current ratio*) is the ratio of current assets to current liabilities. Return volatility (*Return volatility*) is the standard deviation of the stock returns in the 12 months of a fiscal year. Institutional ownership (*Inst. ownership*) is the percentage of common shares outstanding held by institutional investors. Credit rating (*Debt rating*) is calculated based on S&P Long-term Issuer Credit ratings, with letter ratings converted to numeric ratings using an ordinal scale ranging from 1 (for "SD") to 23 (for "AAA"). Credit rating dummies are calculated for each one of the letter credit ratings. We also create a dummy variable capturing the firms without credit ratings (*No rating*).

The definitions of the above variables, as well as other variables used in the paper are provided in the Appendix. For all variables, we winsorize them at the 1% and 99% levels to minimize the effect of outliers.

3.5. Descriptive Statistics

Panel A of Table 1 reports the summary statistics on loan characteristics. The average all-in-drawn spread (*AISD*) of the loans in our sample is 172 basis points. On average, loan maturity

and loan size are about 45 months and $337 million, respectively. About 26% of the loans in our sample are term loans and about 55% of the loans have performance-pricing provisions. Among the loans with information available on collateral requirements, 69% are secured by collateral.

Panel A of Table 1 also reports the statistics of the stock liquidity variables and other firm characteristics. The mean values of *LIQRES*, *LIQAMIHUD,* and *LIQFHT* are –0.01, –0.15, and –0.01, respectively. The average firm in our sample has a market-to-book ratio of 1.69, return on assets of 14%, and leverage of 30%. About 44% of the loans in our sample do not have an S&P Domestic Long-Term Issuer Credit Rating at the time of loan initiation. Of the loans with a credit rating at the time of loan initiation, the average rating is around 14.

Panel B of Table 1 reports the pairwise correlations among key variables. We find that the three stock liquidity variables are positively correlated to each other. For instance, the correlation between *LIQRES* and *LIQAMIHUD* is 0.82. The correlation between *LIQRES* and *LIQFHT* is 0.87. In addition, we find that stock liquidity variables are correlated negatively with bank loan spread and secured loan dummy, and positively with loan maturity. Finally, we also find that larger firms, firms with lower leverages, more profitable firms, and firms with more tangible assets have lower bank loan spread. These findings are consistent with the literature.

4. Empirical Results

This section presents the empirical results on the relation between a firm's stock liquidity and the cost of its bank loans. Section 4.1 discusses the main research design and the baseline regression results. Section 4.2 discusses the results from robustness checks.

4.1. Borrower Stock Liquidity and Bank Loan Spread

In this subsection, we investigate the relation between borrower stock liquidity and loan spreads charged by banks by employing the following ordinary least squares (OLS) regression model:

$$Log(AISD)_{i,j,t} = \alpha + \beta\ Stock\ liquidity_{i,t-1} + \boldsymbol{\delta}\ Firm\ characteristics_{i,t-1} + \boldsymbol{\lambda}\ Loan\ characteristics_{i,j,t} + Year_t + Industry_i + FE + \varepsilon_{i,j,t}, \quad (2)$$

where *Log(AISD)* is the natural logarithm of loan spread for loan *j* issued to firm *i* in fiscal year *t*. *Stock liquidity* is *LIQRES*, *LIQAMIHUD,* or *LIQFHT* for firm *i* in fiscal year *t–1*. We measure stock liquidity and other firm characteristics described below one year prior to loan initiation to mitigate potential endogeneity concerns.

We follow the extant literature and control for various borrower characteristics including firm size, market-to-book-ratio, leverage, return on assets, tangibility, interest coverage ratio, current ratio, return volatility, and institutional ownership. We also control for loan characteristics including loan size, loan maturity, and the dummy variable of performance pricing provisions. Further, we include fixed effects for industry (one-digit SIC), year, loan type, and loan purpose. Odders-White and Ready (2006) find that stock liquidity and credit ratings are correlated. Hence, we include credit rating dummies in the regressions as well. Because many firms have multiple loan facilities initiated in any given year, we use heteroskedasticity-robust standard errors adjusted for firm-level clustering.

Table 2 presents the regression results. In Column (1), we report the results with *LIQRES* as the stock liquidity variable. Columns (2) and (3) present the results with *LIQAMIHUD* and *LIQFHT* as the stock liquidity variable, respectively. The coefficients of all three stock liquidity variables are negative and are statistically significant at the 1% level. All three coefficients are

economically significant as well. For instance, the coefficient of *LIQRES* is –6.524. Given that the mean bank loan spread in our sample is 171.73 basis points, this coefficient indicates that a one-standard-deviation increase in *LIQRES* would decrease *Log(AISD)* from its mean of 5.146 to 5.087. This decrease in *Log(AISD)* corresponds to a decrease in loan spread (i.e., *AISD*) by 10.85 basis points. Similarly, a one-standard-deviation increase in *LIQFHT* would decrease loan spread by 15.56 basis points from its mean.

Overall, the above results show a negative relation between borrower stock liquidity and the cost of bank loans. These findings suggest that banks positively value borrower stock liquidity and reward firms with higher stock liquidity with lower loan spread.

The coefficients of the other control variables in Table 2 also have the expected signs. Firms with larger size, higher market-to-book ratio, higher ROE, lower return volatility, lower financial leverage, and higher interest coverage ratio have lower bank loan spread. Similarly, larger loans, loans with longer maturity, and loans with performance pricing provisions have lower bank loan spread as well.

4.2. Robustness Checks

We further conduct several robustness checks on the relation between borrower stock liquidity and bank loan spread. First, we control for market conditions in the credit markets. Credit market factors can affect the cost of bank loans. However, they are unlikely to affect firm-level stock liquidity, so that they should not bias our estimation on the relation between borrower stock liquidity and bank loan spread. Nevertheless, we control for these factors here to demonstrate robustness of our earlier findings. Specifically, we control for credit spread (measured as the difference between BAA and AAA corporate bond yields) and term spread (measured as the difference between 10-year and 1-year Treasury bond yields) in the baseline regression model

specified in Equation (2). We provide the results in Panel A of Table 3. As can be seen, the coefficients of the stock liquidity variables remain negative and significant after controlling for these credit market variables.

Second, we control for firm default probability. As we discussed in Section 2, stock liquidity could affect the cost of bank loans by affecting a firm's probability of default, for example, via the financial constraint and corporate governance mechanisms. Thus, we chose not to control for default probability in the baseline regression model listed in Equation (2) so that the mechanisms affecting the relation between stock liquidity and the cost of bank loans is not weakened by such controls. Nevertheless, we control for default probability here to demonstrate robustness of our earlier findings. Specifically, we control for both Altman Z-score (*Altman z*) and a modified version of Altman Z-score without leverage (*Mod. Altman z*) as in Graham, Lemmon and Schallheim (1998). Altman Z-score considers a firm's leverage in its calculation while Modified Altman Z-score does not. We calculate Altman z-score and Modified Altman z-score as:

$$Altman\ z_{i,t} = \frac{1.2*(Current\ Assets - Current\ Liabilities)_{i,t} + 1.4*Retained\ Earnings_{i,t} + 3.3*EBIT_{i,t} + 0.999*Sales}{Total\ Assets} + \frac{0.6*Market\ Capitalization}{Total\ Liabilities} \quad (3)$$

$$Mod.\ Altman\ z_{i,t} = \frac{1.2*(Current\ Assets - Current\ Liabilities)_{i,t} + 1.4*Retained\ Earnings_{i,t} + 3.3*EBIT_{i,t} + 0.999*Sales}{Total\ Assets} \quad (4)$$

The results based on both Z-score variables are similar. For the purpose of brevity, we present in Panel B of Table 3 only the results based on modified Altman Z-score. We find that the coefficients of the stock liquidity variables continue to remain negative and highly significant.

Third, we try alternative controls for industry fixed effects by defining industries based on two-digit SIC codes or Fama and French industry classifications instead of one-digit SIC codes as in the earlier studies. Finally, we also exclude the crisis period of 2008-2009 from our sample to

mitigate the concern of outlier years in this period. Our results in the last two robustness checks remain qualitatively the same. For the purpose of brevity, we choose not to present these results in the paper. These results are available upon request by readers.

5. Addressing Endogeneity Concern

In this section, we discuss various econometric techniques used to address the potential endogeneity concern on the relation between borrower stock liquidity and bank loan spread.

5.1. Firm Fixed Effects

In our earlier baseline regression model, we explicitly control for several characteristics that could affect both stock liquidity and bank loan spread. However, there could exist some unobserved variables that bias our estimation. To mitigate this endogeneity concern, we first replace industry fixed effects by firm fixed effects in Equation (2) to purge uncontrolled time-invariant firm characteristics. Table 4 reports the results. As can be seen, the coefficients of *LIQRES* and *LIQFHT* remain negative and statistically significant after controlling for firm fixed effects. However, the coefficient of *LIQAMIHUD* becomes insignificant although it remains negative.

5.2. Instrumental Variables Approach

Next, we address the endogeneity concern by using two-stage least squares (2SLS) approach. The 2SLS approach complements the control of firm fixed effects as discussed above by controlling for time-variant omitted variables.

The key in the 2SLS approach is to identify the appropriate instrumental variables. Following Fang, Noe, and Tice (2009), we use stock liquidity of industry peers as the instrument

for firm-level stock liquidity. This instrument is viable because stock liquidity of industry peers is related to a firm stock liquidity but unlikely to be related to bank loan spread. We calculate stock liquidity of industry peers as the median value of stock liquidity of a firm's peers. We define a firm's peers as those firms in the same one-digit SIC industry and size quintile as the firm, excluding the firm itself. In the first-stage regression, we regress on firm stock liquidity against stock liquidity of industry peers and all the control variables used in the baseline model. We calculate the fitted values of firm stock liquidity from this regression. In the second-stage, we run the baseline model specified in Equation (2) by replacing the stock liquidity variable with the fitted values of stock liquidity obtained from the first-stage regression. Since we use three different stock liquidity variables, we run three sets of first- and second-stage regressions corresponding to these three stock liquidity variables.

Table 5 presents the results from 2SLS regressions. Columns (1), (3), and (5) present the first-stage regression results with *LIQRES*, *LIQAMIHUD*, and *LIQFHT* as the stock liquidity variables. The second-stage results corresponding to these liquidity variables are reported in Columns (2), (4), and (6). For the purpose of brevity, we discuss only the first- and second-stage results in Columns (1) and (2) with *LIQRES* as the stock liquidity variable. The results are similar when we use *LIQAMIHUD* and *LIQFHT* as the liquidity variables. First, we find that the coefficient of *LIQRES* of industry peers (*Med(LIQRES)*), the instrument of firm-level *LIQRES*, is positive in the first-stage regression in Column (1). The coefficient is statistically significant at the 1% level. Second, we find that the coefficient of the fitted value of *LIQRES* (*Fitted(LIQRES)*) is negative in the second-stage regression, and it is statistically significant. These results are consistent with the baseline regression results presented earlier.

We further conduct several tests to check whether the instrument we use meets the relevance and validity condition. We find that the Durbin Chi-square test statistic from the second stage regression is 181.853 (*p*-value=0.000) and the Wu-Hausman F-statistic is 183.132 (*p*-value=0.000) in Column (2). These two test statistics suggest the existence of endogeneity. We also find the F-statistic from the first stage regression is 902.222 (p-value=0.000) and the partial R-square is 0.234 in Column (1). These statistics confirm that *LIQRES* of industry peers is a viable instrument for firm-level *LIQRES*. Since we use only one instrument, we are unable to conduct any over-identification tests. Overall, the results from the 2SLS approach show that the negative relation between borrower stock liquidity and bank loan spread is unlikely to be driven by endogeneity.

5.3. Difference-in-differences Approach

In this subsection, we use a difference-in-differences (DiD) approach to further establish a causal link between borrower stock liquidity and bank loan spread. To do it, we utilize the decimalization of tick size surrounding 2001 as an exogenous shock to stock liquidity. Prior to 2001, the minimum tick size of the quotes and trades on the NYSE, the AMEX, and the Nasdaq was $1/16. The minimum tick size was reduced from $1/16 to $1/100 over the interval of August 28, 2000 – January 29, 2001 at the NYSE and the AMEX, and in March 12, 2001 – April 9, 2001 at the Nasdaq. Studies have shown that decimalization of tick size has led to a significant increase in stock liquidity (see, for example, Bessembinder 2003; Furfine 2003). On the other hand, it is unlikely that decimalization will directly affect the cost of bank loans. As a result, decimalization serves as a viable exogenous shock to stock liquidity and provides a good quasi-experimental setting to examine the relation between stock liquidity and loan spread.

In the DID approach, we study the change in loan pricing terms in response to the change in borrower stock liquidity due to decimalization. If banks price stock liquidity of their borrowers into bank loans, the firms with larger changes in stock liquidity around decimalization should have lower bank loan spread. In the following, we discuss the procedures of the DiD approach in detail.

We first identify the treatment and control groups of firms based on the change in stock liquidity from the pre-decimalization fiscal year *t–1* to the post-decimalization fiscal year *t+1*, where *t* indicates the fiscal year during which decimalization happened. The treatment group consists of the firms with changes in stock liquidity above the sample median. The control group consists of the firms with the changes below the sample median. This procedure yields 270 firms in the treatment group and another 269 in the control group.

Next, we identify a control firm for each treatment firm by using a propensity score matching algorithm. Specifically, we estimate the following probit model using the sample of 539 treatment and control firms:

$$Treatment = \beta_0 + \beta_1\, Stock\ liquidity + \boldsymbol{\delta}\, Firm\ characteristics + \varepsilon. \quad (5)$$

The dependent variable, *Treatment*, equals one if a firm is a treatment firm and zero otherwise. Stock liquidity is measured using *LIQRES*. The firm characteristics consist of institutional ownership and all the other firm-level controls used in the baseline regression including industry fixed effects. All the variables are measured in the pre-decimalization fiscal year. Using the probit regression specified in Equation (5), we estimate the propensity score for each firm as the predicated probability of the firm being a treatment firm. Using these scores, we match each treatment firm with a control firm with the closest propensity score. If a control firm is matched to more than one treatment firm, we retain only the pair for which the difference in propensity scores between the treatment and control firms is the smallest. This procedure produces 100 unique pairs

of matched firms, with 1,069 loan facilities initiated in the two years prior to decimalization and the two years subsequent to decimalization.[4]

To verify whether the propensity score matching process is valid, we examine the difference between the propensity scores of the treatment and their matched control firms. Panel A of Table 6 presents the results. The difference in propensity scores between the treatment and the matched control firms is very small, confirming the validity of the matching process. In addition, we also compare the pre-decimalization firm characteristics and loan characteristics between the treatment and the matched control firms to see whether there are any fundamental differences between these two types of firms. Panel B of Table 6 provides the statistics of these comparisons. As can be seen, both the treatment and the control firms have similar stock liquidity in the pre-decimalization year. There are also no significant pre-decimalization differences in other firm characteristics such as size, market-to-book, leverage, and performance between the treatment and the matched control firms. Similarly, the pre-decimalization differences in loan pricing terms between the treatment and the matched control firms are also insignificant. Thus, the control firms matched by the propensity score matching procedure have similar stock liquidity, firm characteristics, and loan characteristics to the treatment firms.

We conduct the DiD analysis first in a univariate setting. For each treatment and control firm in the sample, we compute the average loan terms in the two years prior to decimalization (*Before*) and in the two years subsequent to decimalization (*After*). We then subtract the pre-decimalization loan spread from the post-decimalization loan spread to calculate loan spread

[4] Alternatively, we could use loan facilities in the immediate pre-decimalization and post-decimalization years (i.e., years *t-1* and *t+1*) instead of loan facilities in the two years prior to decimalization and the two years subsequent to decimalization. However, the sample size of loan facilities would reduce significantly if we use a window from year *t*-1 to *t+1* around decimalization, since some firms do not have loans in the year immediately preceding or post decimalization.

(*After-Before*). DiD of loan spread is the difference in loan spread (*After-Before*) between the treatment firm and its matched control firm. Panel C of Table 6 presents the results on DiD of loan spread. Our results show that the loan spread of an average treatment firm is lower by 28.2 basis points than that of its matched control firm. DiD of loan spread between these two types of firms is both statistically and economically significant. By construction, the increase in stock liquidity experienced by an average treatment firm around decimalization is greater than that experienced by its matched control firm. Thus, our univariate DiD results are consistent with the previous regression results, showing a negative relation between borrower stock liquidity and bank loan spread.

Bank loan spread could be affected by loan and firm characteristics. To control for these characteristics, we further perform the DiD analysis in the following regression framework:

$$Log(AISD)_{ij,t} = \beta_0 + \beta_1 Treatment + \beta_2 After + \beta_3 Treatment * After + \boldsymbol{\delta} Firm\ characteristics_{i,t-1} + \boldsymbol{\lambda} Loan\ characteristics_{ij,t} + \varepsilon_{ij,t} \quad (6)$$

Treatment is a dummy variable equal to one for loans made to treatment firms and zero otherwise. *After* is a dummy variable equal to one if the loan-firm-year observation is in the post-decimalization period and zero otherwise. The control variables are the same firm and loan characteristics used in the baseline regression model. We also control for fixed effects for year, industry, loan type, loan purpose, and credit rating. The variable of interest in Equation (6) is the interaction variable between *Treatment* and *After* (*Treatment*After*). The coefficient of this interaction variable captures how a treatment firm's change in loan spread around decimalization differs from the change of a control firm. To be consistent with the previous results on the negative relation between borrower stock liquidity and bank loan spread, we expect that a treatment firm

experiences a smaller change in its loan spread around decimalization (when stock liquidity increases) than does a control firm. In other words, we expect β_3 to be negative.

Panel D of Table 6 reports the results. The coefficients of the interaction term between *Treatment* and *After* are negative and significant regardless of whether or not we include control variables in the regressions. These findings suggest that, all else equal, firms that experience a higher increase in stock liquidity around decimalization have lower post-decimalization loan spread. Overall, these DiD results are consistent with the previous findings. They provide causal evidence that firms with higher stock liquidity have lower loan spread.

6. Mechanisms on Borrower Stock Liquidity and Bank Loan Spread

In this section, we examine possible mechanisms through which higher borrower stock liquidity reduces bank loan spread. In Section 6.1, we examine the reduction in financial constraints as one potential mechanism. In Section 6.2, we examine improved corporate governance as another potential mechanism. Finally, we examine in Section 6.3 the possibility that the increased takeover threat on a firm with liquid stock could weaken the negative relation between borrower stock liquidity and bank loan spread.

6.1. Reduction in Financial Constraints

Higher stock liquidity could reduce a firm's financial constraints, thereby reducing the cost of its bank loans (see detailed discussions in Section 2.1). In this subsection, we study this financial constraint mechanism. Presumably, the reduction in financial constraints is more valuable for financially constrained firms than for financially unconstrained firms. Therefore, we predict from the financial constraint mechanism that the negative impact of stock liquidity on loan spread will be stronger on financially constrained firms than on financial unconstrained firms.

We follow Almeida, Campello and Weisbach (2004) and Denis and Sibilkov (2010) and define financial constrained firms as firms with either no S&P Long Term Issuer Credit Rating or having a default rating for debt (rating of "D" or "SD") at the time of loan initiation. We create a dummy variable *Constrained* based on this definition. *Constrained* equals one for financially constrained firms and zero otherwise. We then include this dummy variable and the interaction term between the stock liquidity variables and *Constrained* to the baseline loan spread regression specified in Equation (2). Table 7 presents the results. Our results show that the coefficients of the interaction terms between the three stock liquidity variables and *Constrained* are negative and statistically significant. These findings suggest that the negative impact of borrower stock liquidity on bank loan spread is stronger for financially constrained firms than for financially constrained firms. They are consistent with the prediction from the financial constraints mechanism.

6.2. Improvement in Corporate Governance

As discussed in Section 2.1, higher stock liquidity of a firm could improve the firm's corporate governance, and thus reduce the cost of its bank loans. In this subsection, we study this corporate governance mechanism by focusing on pay-for-performance sensitivity. Jayaraman and Milbourn (2012) show that higher stock liquidity increases the performance-sensitivity of executive compensation contracts. When the performance sensitivity is higher, managers have stronger incentives to improve firm performance and maximize shareholders' value, which helps reduce the firm's probability of default and consequently its cost of bank loans. Therefore, we predict from the corporate governance mechanism that the negative effect of borrower stock liquidity on bank loan spread is stronger on the borrowers whose managers have greater performance-sensitivity in their executive compensation.

To proxy for pay-for-performance sensitivity, we use the "scaled-wealth-performance sensitivity" measure in Edmans, Gabaix, and Landier (2009).[5] In particular, we sort our sample firms into quintiles based on scaled-wealth-performance sensitivity. We create a dummy variable *High WPS* that equals one if scaled-wealth-performance sensitivity belongs to the top quintile and zero otherwise. We then rerun the baseline regression specified in Equation (2) with *High WPS* and the interaction term between stock liquidity and *High WPS* as additional independent variables. Table 8 provides the results. The coefficients of the interaction terms are negative for all three stock liquidity variables. They are also statistically significant for two of the stock liquidity variables, *LIQRES and LIQAMIHUD*. These results are consistent with the prediction from the corporate governance mechanism, indicating that the improvement in corporate governance could be a plausible channel through which higher borrower stock liquidity reduces bank loan spread.

6.3. Takeover Exposures

In this subsection, we study the takeover mechanism as discussed in Section 2.2. In particular, we study whether the takeover pressure induced by high stock liquidity could weaken or subsume the negative relation between borrower stock liquidity and bank loan spread. Kyle and Vila (1991) argue that a firm's exposure to takeover threats is higher when its stock liquidity is higher. Chava, Livdan, and Purnanandam (2009) further show that lenders charge a significantly higher spread to firms with higher takeover vulnerability. Thus, we predict from the takeover pressure mechanism that the negative effect of borrower stock liquidity on bank loan spread is weaker for firms that are more vulnerable to takeovers.

[5] Scaled-wealth-performance sensitivity is defined as the dollar change in CEO wealth for a one-percentage change in firm value, divided by equity pay. We thank Prof. Alex Edmans for making the data available in his website (http://faculty.london.edu/aedmans/data.html).

To test this prediction, we follow Chava, Livdan, and Purnanandam (2009) and construct a dummy variable *Delaware* which equals one for firms incorporated in Delaware and zero otherwise. Firms incorporated in the state of Delaware are more likely to receive takeover bids due to the favorable laws in place for acquisitions. We then rerun our baseline regression with *Delaware* and the interaction term between borrower stock liquidity and *Delaware* as additional independent variables. Table 9 reports the results. The coefficients of *Delaware* are positive but insignificant. The coefficients of the interaction terms between the stock liquidity variables and *Delaware* are also insignificant. In contrast, the coefficients of the stock liquidity variables remain negative and statistically significant. Taken together, these results suggest that banks are not particularly concerned with the increased takeover vulnerability induced by higher stock liquidity when determining loan spread.

7. Impact of Borrower Stock Liquidity on Non-Price Loan Terms

Our analysis thus far has focused exclusively on how borrower stock liquidity affects bank loan spread. Given that bank loan contracts are multidimensional, banks can tailor the lending contracts to suit borrower attributes not only by adjusting loan spread but also through other non-spread related contractual terms. In this section, we examine whether borrowers with high stock liquidity also receive favorable non-price loan terms by focusing on two major non-price loan terms: loan maturity and collateral requirements.

We first examine the relation between borrower stock liquidity and loan maturity. We run regression on *Log (Loan maturity)*, the logarithm of loan facility's maturity in months, against the stock liquidity variables, namely *LIQRES*, *LIQAMIHUD,* and *LIQFHT*. The control variables include the firm characteristics used in the baseline regression, asset maturity, loan size, and the dummy variable of performance pricing provisions. We also control for fixed effects for year,

industry, loan type, loan purpose, and credit rating. We present the results in Panel A of Table 10. As can be seen, the coefficients of all three stock liquidity variables are positive. The coefficients of *LIQRES* and *LIQFHT* are statistically significant, while the coefficient of *LIQAMIHUD* is insignificant.

Next, we examine the impact of borrower stock liquidity on the likelihood of collateral requirements by running logistic regressions. The dependent variable in the logistic regressions, *Secured,* is a dummy variable equal to one if a loan facility is secured by collateral and zero otherwise. The independent variables include all the variables used in the baseline model. We present the results in Panel B of Table 10. The coefficients of all three stock liquidity variables are negative and statistically significant.

Overall, our results above show that borrower stock liquidity affects the non-price features of loan contracts. Loans borrowed by firms with higher stock liquidity are associated with longer loan maturity and a smaller likelihood of pledging collateral against their loans.

8. Conclusion

In this paper, we examine the relation between a firm's stock liquidity and the cost of its bank loans using a comprehensive sample of over 16,000 bank loans between 1994 and 2010. We provide empirical evidence that firms with higher stock liquidity have lower bank loan spread. The result is robust to using a broad range of stock liquidity variables. We also use the decimalization of tick size surrounding 2001 as an exogenous shock to firm-level stock liquidity and conduct a difference-in-differences analysis. We find that firms that experience a larger increase in stock liquidity surrounding decimalization have lower bank loan spread. These results suggest that banks positively value the higher stock liquidity of their borrowers and accordingly charge these borrowers with lower loan spreads.

We also study the potential mechanisms through which higher borrower stock liquidity reduces bank loan spread. We find that reduced financial constraint and improved corporate governance are two possible mechanisms. In contrast, the increase in takeover exposure induced by higher stock liquidity does not seem to affect the relation between borrower stock liquidity and bank loan spread.

Finally, we find that borrower stock liquidity has an impact on non-price loan contracting terms as well. Specifically, we find that firms with higher stock liquidity have a longer loan maturity and a smaller likelihood of collateral requirements. Overall, our results indicate that stock liquidity of borrowers plays an important role in bank loan contracting.

References

Admati, A. R., and P. Pfleiderer, 2009, The "Wall Street Walk" and shareholder activism: Exit as a form of voice, *Review of Financial Studies* 22, 2645-2685.

Almeida, H., M. Campello, and M. S. Weisbach, 2004, The cash flow sensitivity of cash, *Journal of Finance* 59, 1777-1804.

Amihud, Y., 2002, Illiquidity and stock returns: Cross-section and time-series effects, *Journal of Financial Markets* 5, 31–56.

Baker, M., and J. C. Stein, 2004, Market liquidity as a sentiment indicator, *Journal of Financial Markets* 7, 271-299.

Banerjee, S., V. A. Gatchev, and P. A. Spindt, 2007, Stock market liquidity and firm dividend policy, *Journal of Financial and Quantitative Analysis* 42, 369-397.

Bessembinder, H., 2003, Trade execution costs and market quality after decimalization, *Journal of Financial and Quantitative Analysis* 38, 747-777.

Bharath, S. T., S. Jayaraman, and V. Nagar, 2013, Exit as governance: An empirical analysis, *Journal of Finance* 68, 2515-2547.

Bharath, S. T., J. Sunder, and S. V. Sunder, 2008, Accounting quality and debt contracting, *Accounting Review* 83, 1-28.

Bhojraj, S., and P. Sengupta, 2003, Effect of corporate governance on bond ratings and yields: The role of institutional investors and outside directors, *Journal of Business* 76, 455-475.

Bond, P., A. Edmans, and I. Goldstein, 2012, The real effects of financial markets, *Annual Review of Financial Economics* 4, 339-360.

Butler, A. W., G. Grullon, and J. P. Weston, 2005, Stock market liquidity and the cost of issuing equity, *Journal of Financial and Quantitative Analysis* 40, 331-348.

Butler, A. W., and H. Wan, 2010, Stock market liquidity and the long-run stock performance of debt issuers, *Review of Financial Studies* 23, 3966-3995.

Chava, S., D. Livdan, and A. Purnanandam, 2009, Do shareholder rights affect the cost of bank loans?, *Review of Financial Studies* 22, 2973-3004.

Chava, S., and M. R. Roberts, 2008, How does financing impact investment? The role of debt covenants, *Journal of Finance* 63, 2085-2121.

Chordia, T., R. Roll, and A. Subrahmanyam, 2001, Market liquidity and trading activity, *Journal of Finance* 56, 501-530.

———, 2008, Liquidity and market efficiency, *Journal of Financial Economics* 87, 249-268.

Cremers, K. J. M., and V. B. Nair, 2005, Governance mechanisms and equity prices, *Journal of Finance* 60, 2859-2894.

Denis, D. J., and V. T. Mihov, 2003, The choice among bank debt, non-bank private debt, and public debt: Evidence from new corporate borrowings, *Journal of Financial Economics* 70, 3-28.

Denis, D. J., and V. Sibilkov, 2010, Financial constraints, investment, and the value of cash holdings, *Review of Financial Studies* 23, 247-269.

Diamond, D. W., 1984, Financial intermediation and delegated monitoring, *Review of Economic Studies* 51, 393-414.

Edmans, A., 2009, Blockholder trading, market efficiency, and managerial myopia, *Journal of Finance* 64, 2481-2513.

Edmans, A., V. W. Fang, and E. Zur, 2013, The Effect of liquidity on governance, *Review of Financial Studies* 26, 1443-1482.

Edmans, A., X. Gabaix, and A. Landier, 2009, A multiplicative model of optimal CEO incentives in market equilibrium, *Review of Financial Studies* 22, 4881-4917.

Edmans, A., and G. Manso, 2011, Governance through trading and intervention: A theory of multiple blockholders, *Review of Financial Studies* 24, 2395-2428.

Fama, E. F., 1985, What's different about banks?, *Journal of Monetary Economics* 15, 29-39.

Fang, V. W., T. H. Noe, and S. Tice, 2009, Stock market liquidity and firm value, *Journal of Financial Economics* 94, 150-169.

Fang, V. W., X. Tian, and S. Tice, 2014, Does stock liquidity enhance or impede firm innovation?, *Journal of Finance* 69, 2085-2125.

Fong, K. Y. L., C. W. Holden, and C. A. Trzcinka, What are the best liquidity proxies for global research? (Social Science Research Network, cited April 6 2015], available from Social Science Research Network website: http://ssrn.com/abstract=1558447

Furfine, C., 2003, Decimalization and market liquidity, *Economic Perspectives* 27, 2-12.

Ghosh, A., and P. C. Jain, 2000, Financial leverage changes associated with corporate mergers, *Journal of Corporate Finance* 6, 377–402.

Goyenko, R. Y., C. W. Holden, and C. A. Trzcinka, 2009, Do liquidity measures measure liquidity?, *Journal of Financial Economics* 92, 153–181.

Graham, J. R., M. L. Lemmon, and J. S. Schallheim, 1998, Debt, leases, taxes, and the endogeneity of corporate tax status, *Journal of Finance* 53, 131-162.

Graham, J. R., S. Li, and J. Qiu, 2008, Corporate misreporting and bank loan contracting, *Journal of Financial Economics* 89, 44-61.

Hale, G., and J. A. C. Santos, 2009, Do banks price their informational monopoly?, *Journal of Financial Economics* 93, 185-206.

Hasbrouck, J., 2009, Trading costs and returns for U.S. equities: Estimating effective costs from daily data, *Journal of Finance* 64, 1445-1477.

Houston, J., and C. James, 1996, Bank information monopolies and the mix of private and public debt claims, *Journal of Finance* 51, 1863-1889.

Jayaraman, S., and T. T. Milbourn, 2012, The role of stock liquidity in executive compensation, *Accounting Review* 87, 537-563.

Kahn, C., and A. Winton, 1998, Ownership structure, speculation, and shareholder intervention, *Journal of Finance* 53, 99-129.

Kyle, A. S., and J.-L. Vila, 1991, Noise trading and takeovers, *Rand Journal of Economics* 22, 54-71.

Maug, E., 1998, Large shareholders as monitors: Is there a trade-off between liquidity and control?, *Journal of Finance* 53, 65-98.

Noe, T. H., 2002, Investor activism and financial market structure, *Review of Financial Studies* 15, 289-318.

Odders-White, E. R., and M. J. Ready, 2006, Credit ratings and stock liquidity, *Review of Financial Studies* 19, 119-157.

Rajan, R. G., 1992, Insiders and outsiders: The choice between informed and arm's-length debt, *Journal of Finance* 47, 1367-1400.

Roberts, G., and L. E. Yuan, 2010, Does institutional ownership affect the cost of bank borrowing?, *Journal of Economics and Business* 62, 604–626.

Santos, J. A. C., and A. Winton, 2008, Bank loans, bonds, and information monopolies across the business cycle, *Journal of Finance* 63, 1315-1359.

Schenone, C., 2010, Lending relationships and information rents: Do banks exploit their information advantages?, *Review of Financial Studies* 23, 1149-1199.

Sharpe, S. A., 1990, Asymmetric information, bank lending, and implicit contracts: A stylized model of customer relationships, *Journal of Finance* 45, 1069-1087.

Stein, J. C., 1988, Takeover Threats and Managerial Myopia, *Journal of Political Economy* 96, 61-80.

———, 1989, Efficient capital markets, inefficient firms: A model of myopic corporate behavior, *Quarterly Journal of Economics* 104, 655-669.

Appendix

Variable Definitions

Variable	Definition
Loan Characteristics	
$AISD_{ij,t}$	The amount borrower *i* pays per dollar drawn down in basis points over LIBOR for loan *j* initiated in fiscal year *t*. It adds the spread of the loan with any annual (or facility) fee paid to the bank group
Loan $size_{ij,t}$	Size of borrower *i's* loan facility *j* initiated in fiscal year *t* in millions USD
Loan $maturity_{ij,t}$	Maturity of borrower *i's* loan facility *j* initiated in fiscal year *t* in months
Term $loan_{ij,t}$	A dummy variable which equals one if borrower *i's* loan facility *j* initiated in fiscal year *t* is a term loan and zero otherwise
Syndicate $size_{ij,t}$	Number of lenders in the syndicate of borrower *i's* loan facility *j* initiated in fiscal year *t*
Performance $pricing_{ij,t}$	A dummy variable which equals one if borrower *i's* loan facility *j* initiated in fiscal year *t* has performance pricing provisions and zero otherwise
$Secured_{ij,t}$	A dummy variable which equals one if borrower *i's* loan facility *j* initiated in fiscal year *t* has collateral requirements and zero otherwise
Financial $covenants_{ij,t}$	Number of financial covenants in borrower *i's* loan facility *j* initiated in fiscal year *t*
Stock Liquidity	
$LIQRES_{i,t}$	-1 x (the natural logarithm of one plus relative effective spread, RES), where the RES is defined as the ratio of absolute difference between the price at which stock trade is completed and the median of the prevailing bid-ask quote of the same stock to the median of the prevailing bid-ask quote for each trade, averaged over the firm *i*'s fiscal year *t*
$LIQAMIHUD_{i,t}$	-1 x (the natural logarithm of one plus the firm's Amihud (2002) illiquidity ratio), where the Amihud illiquidity ratio is defined as the arithmetic mean of the daily ratio of absolute value of stock returns to trading volume in dollar terms over all positive-volume days of firm *i*'s fiscal year *t*
$LIQFHT_{i,t}$	-1 x (the natural logarithm of one plus the firm *i*'s Fong, Holden and Trzcinka (2014, FHT) measure for fiscal year *t*), where $FHT=2*Sigma*\Phi^{-1}*(1+Zeros/2)$. where Sigma is the standard deviation of daily stock returns calculated over all trading days in firm *i*'s fiscal year *t*, Φ is the cumulative normal distribution, and Zeros is the proportion of trading days with zero stock returns, which is calculated as the ratio of number of trading days with zero stock returns to by the number of total trading days for firm *i*'s during fiscal year *t*
Firm Characteristics	
Log $(Assets)_{i,t}$	Natural logarithm of book value of total assets of firm *i* at the end of fiscal year *t*
Market-to-$book_{i,t}$	Ratio of (book value of total assets – book value of equity + market value of equity) to book value of total assets of firm *i* at the end of fiscal year *t*
$Leverage_{i,t}$	Ratio of sum of short and long term debt to book value of total assets of firm *i* at the end of fiscal year *t*
$ROA_{i,t}$	Ratio of operating income before depreciation to book value of total assets of firm *i* at the end of fiscal year *t*
$Tangibility_{i,t}$	Ratio of net property, plant and equipment (PPE) to book value of total assets of firm *i* at the end of fiscal year *t*
Interest $Coverage_{i,t}$	Natural logarithm of one plus the ratio of EBITDA to interest expenses of firm *i* at the end of fiscal year *t*
Current $ratio_{i,t}$	Ratio of current assets to current liabilities of firm *i* at the end of fiscal year *t*
Return $volatility_{i,t}$	Standard deviation of the 12 months stock returns of firm *i* over of fiscal year *t*
Inst. $ownership_{i,t}$	Percentage of common shares outstanding held by the institutional investors of firm *i* for fiscal year *t*

(continued)

Appendix – *continued*

Variable	Definition
Debt rating$_{i,t}$	S&P Long Term Issuer Credit Rating of firm *i* for fiscal year *t*. We convert the letter ratings into numeric ratings using an ordinal scale ranging from 1 (for "SD") to 23 (for "AAA").
No rating$_{i,t}$	A dummy variable which equals one if firm *i* doesn't have an debt rating for fiscal year *t*
Altman z$_{i,t}$	{1.2 x (current assets – current liabilities) + 1.4 x retained earnings + 3.3 x EBITDA + 0.999 x sales} / book value of assets + 0.6 x (market value of equity/total liabilities) of firm *i* at the end of fiscal year *t*
Mod. Altman z$_{i,t}$	{1.2 x (current assets – current liabilities) + 1.4 x retained earnings + 3.3 x EBITDA + 0.999 x sales} / book value of assets of firm *i* at the end of fiscal year *t*
Credit spread$_t$	Difference between BAA and AAA corporate bond yields) and term spread at the end of fiscal year *t*
Term spread$_t$	Difference between 10-year and 1-year Treasury bond yields at the end of fiscal year *t*
Asset maturity$_{i,t}$	(Gross PPE/(current assets + gross PPE)) x (gross PPE/depreciation) + (current assets /(current assets +gross PPE)) x (current assets/cost of goods sold) of firm *i* at the end of fiscal year *t*
Constrained$_{i,t}$	A dummy variable which equals one if firm *i* has no debt rating or has a default debt rating ("D" and "SD") for fiscal year *t* and zero otherwise
WPS$_{i,t}$	Scaled wealth-performance sensitivity defined as the ratio of change in CEO wealth in dollar terms for a 100 percentage point change in firm value to CEO annual flow compensation of firm *i* in year *t*
Delaware$_i$	A dummy variable which equals one if firm *i* is incorporated in Delaware and zero otherwise
Instrumental Variable	
Med. (Stock Liquidity)$_{i,t}$	Median value of stock liquidity of the firms in the same one-digit SIC industry and size quintile to which firm *i* belongs to for fiscal year *t*, excluding firm *i*'s own stock liquidity, where stock liquidity equals *LIQRES*, *LIQAMIHUD*, or *LIQFHT*

Table 1
Descriptive Statistics and Correlation Matrix

This table reports the descriptive statistics (Panel A) and Pearson correlation matrix (Panel B) of various loan characteristics, stock liquidity characteristics, and other firm characteristics for the 16,413 facility-year observations in our sample between 1994 and 2010. Please refer to the appendix for the detailed definitions of these variables. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Descriptive statistics

Variable	N	Mean	Min	5th Pctl	50th Pctl	95th Pctl	Max	Std Dev
Loan Characteristics								
AISD (basis points)	16546	171.73	15.00	25.00	150.00	400.00	650.00	125.88
Loan size ($million)	16546	337.01	1.85	8.00	150.00	1500.00	3000.00	520.31
Loan maturity (months)	16546	44.78	4.00	12.00	48.00	84.00	102.00	23.46
Term loan	16546	0.26	0.00	0.00	0.00	1.00	1.00	0.44
Syndicate size	16539	8.48	1.00	1.00	6.00	26.00	40.00	8.20
Performance pricing	16546	0.55	0.00	0.00	1.00	1.00	1.00	0.50
Secured	11687	0.69	0.00	0.00	1.00	1.00	1.00	0.46
Financial covenants	11146	2.41	1.00	1.00	2.00	4.00	5.00	1.02
Stock Liquidity								
LIQRES	16546	-0.01	-0.05	-0.03	0.00	0.00	0.00	0.01
LIQAMIHUD	16546	-0.15	-2.21	-1.04	-0.01	0.00	0.00	0.39
LIQFHT	16546	-0.01	-0.04	-0.02	0.00	0.00	0.00	0.01
Firm Characteristics								
Log (Assets)	16546	6.96	2.88	4.03	6.89	10.09	10.82	1.81
Market-to-book	16546	1.69	0.73	0.89	1.41	3.52	6.15	0.90
Leverage	16546	0.30	0.00	0.01	0.29	0.60	0.72	0.17
ROA	16546	0.14	-0.05	0.04	0.13	0.27	0.37	0.07
Tangibility	16546	0.35	0.02	0.05	0.29	0.81	0.90	0.23
Return volatility	16546	1.82	0.38	0.63	1.56	3.82	6.92	1.08
Current ratio	16546	2.22	-4.19	0.90	2.01	4.42	6.16	1.12
Interest coverage	16546	9.54	0.77	1.50	7.29	26.07	36.78	7.65
Asset maturity	16546	0.12	0.03	0.04	0.10	0.24	0.37	0.06
Inst. ownership	16546	0.57	0.02	0.11	0.60	0.97	1.15	0.26
Debt rating	9269	13.85	1.00	9.00	14.00	19.00	23.00	3.33
No rating	16546	0.44	0.00	0.00	0.00	1.00	1.00	0.50

Table 1 – *continued*

Panel B: Correlation Matrix

Variable		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	AISD	1															
2	Loan maturity	0.03***	1														
3	Secured	0.55***	0.18***	1													
4	LIQRES	-0.25***	0.09***	-0.28***	1												
5	LIQAMIHUD	-0.22***	0.07***	-0.21***	0.82***	1											
6	LIQFHT	-0.24***	0.08***	-0.27***	0.87***	0.70***	1										
7	Log (Assets)	-0.29***	0.02**	-0.39***	0.68***	0.53***	0.60***	1									
8	Market-to-book	-0.19***	-0.03***	-0.13***	0.16***	0.18***	0.18***	-0.06***	1								
9	Leverage	0.20***	0.12***	0.16***	-0.03***	-0.03***	-0.07***	0.20***	-0.26***	1							
10	ROA	-0.26***	0.03***	-0.17***	0.11***	0.10***	0.14***	-0.07***	0.50***	-0.23***	1						
11	Tangibility	-0.03***	-0.01	-0.08***	0.05***	0.02*	0.04***	0.17***	-0.14***	0.24***	0.09***	1					
12	Return volatility	0.38***	-0.09***	0.32***	-0.24***	-0.13***	-0.27***	-0.29***	0.03***	0.06***	-0.11***	-0.09***	1				
13	Current ratio	0.01	0.01	0.09***	-0.14***	-0.07***	-0.10***	-0.32***	0.12***	-0.27***	0.04***	-0.34***	0.09***	1			
14	Interest coverage	-0.26***	-0.06***	-0.20***	0.12***	0.11***	0.17***	-0.14***	0.46***	-0.69***	0.5^{9}***	-0.14***	-0.10***	0.27***	1		
15	Asset maturity	-0.08***	-0.03***	-0.16***	0.16***	0.08***	0.16***	0.32***	-0.14***	0.24***	-0.12***	0.76***	-0.19***	-0.29***	-0.20***	1	
16	Inst. ownership	-0.17***	0.11***	-0.17***	0.62***	0.48***	0.58***	0.52***	0.04***	-0.05***	0.06***	-0.05***	-0.20***	-0.04***	0.10***	0.00	1

Table 2
Stock Liquidity and Loan Spread

This table reports the pooled Ordinary Least Squares (OLS) regression results examining the relationship between stock liquidity and loan spread. The sample period is from 1994 to 2010. The dependent variable *Log(AISD)* is the natural logarithm of all-in-drawn spread for the loan facility in year *t*. The key independent variable is the stock liquidity of the borrowing firm one year prior to the loan initiation year. The stock liquidity variables in Columns (1), (2), and (3) are *LIQRES*, *LIQAMIHUD*, and *LIQFHT,* respectively. Please refer to the Appendix for the detailed definitions of control variables. All variables are winsorized at the 1st and 99th percentiles. *t*-statistics in parentheses are computed using the robust standard errors clustered by firm. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1) Log(AISD)$_t$	(2) Log(AISD)$_t$	(3) Log(AISD)$_t$
LIQRES $_{t-1}$	-6.524***		
	(-6.72)		
LIQAMIHUD $_{t-1}$		-0.048***	
		(-2.64)	
LIQFHT $_{t-1}$			-9.495***
			(-7.97)
Log (Assets) $_{t-1}$	-0.068***	-0.081***	-0.070***
	(-7.06)	(-8.45)	(-7.41)
Market-to-book $_{t-1}$	-0.041***	-0.048***	-0.039***
	(-4.37)	(-5.10)	(-4.19)
Leverage $_{t-1}$	0.325***	0.343***	0.324***
	(5.93)	(6.25)	(5.90)
ROA $_{t-1}$	-0.905***	-0.935***	-0.884***
	(-6.41)	(-6.58)	(-6.25)
Tangibility $_{t-1}$	-0.016	-0.023	-0.010
	(-0.46)	(-0.69)	(-0.29)
Interest coverage $_{t-1}$	-0.048***	-0.048***	-0.047***
	(-5.10)	(-5.11)	(-4.98)
Current ratio $_{t-1}$	-0.010	-0.010	-0.009
	(-1.54)	(-1.51)	(-1.38)
Return volatility $_{t-1}$	1.472***	1.534***	1.375***
	(13.36)	(13.76)	(12.33)
Inst. ownership $_{t-1}$	-0.009	-0.050*	-0.009
	(-0.29)	(-1.65)	(-0.30)
Log (Loan size) $_t$	-0.076***	-0.077***	-0.076***
	(-10.69)	(-10.88)	(-10.68)
Log (Loan maturity) $_t$	-0.024**	-0.026***	-0.024**
	(-2.54)	(-2.65)	(-2.51)
Performance pricing $_t$	-0.061***	-0.062***	-0.060***
	(-5.25)	(-5.30)	(-5.15)
Constant	6.810***	7.029***	6.799***
	(51.85)	(55.42)	(52.40)
Year effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Loan type and purpose	Yes	Yes	Yes
Credit rating dummies	Yes	Yes	Yes
N	16546	16546	16546
R^2	0.695	0.694	0.696

Table 3
Stock Liquidity and Loan Spread: Robustness Tests

This table reports the pooled Ordinary Least Squares (OLS) regression results examining the relationship between stock liquidity and loan spread controlling for macroeconomic factors (Panel A) and Altman z-score (Panel B). The sample period is from 1994 to 2010. The dependent variable *Log(AISD)* is the natural logarithm of all-in-drawn spread for the loan facility in year *t*. The key independent variable is the stock liquidity of the borrowing firm one year prior to the loan initiation year. The stock liquidity variables in Columns (1), (2), and (3) are *LIQRES*, *LIQAMIHUD*, and *LIQFHT*, respectively. *Credit spread* is the difference between BAA and AAA corporate bond yields. *Term spread* is the difference between 10-year and 1-year Treasury bond yields. *Altman z* is the Altman Z-score. Please refer to the Appendix for the detailed definitions of control variables. All variables are winsorized at the 1st and 99th percentiles. *t*-statistics in parentheses are computed using the robust standard errors clustered by firm. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Controlling for Credit Market Conditions

	(1) Log(AISD)$_t$	(2) Log(AISD)$_t$	(3) Log(AISD)$_t$
LIQRES $_{t-1}$	-6.417***		
	(-6.60)		
LIQAMIHUD $_{t-1}$		-0.047**	
		(-2.57)	
LIQFHT $_{t-1}$			-9.396***
			(-7.88)
Log (Assets) $_{t-1}$	-0.069***	-0.081***	-0.070***
	(-7.15)	(-8.53)	(-7.50)
Market-to-book $_{t-1}$	-0.041***	-0.048***	-0.039***
	(-4.41)	(-5.14)	(-4.23)
Leverage $_{t-1}$	0.328***	0.346***	0.328***
	(6.02)	(6.34)	(5.99)
ROA $_{t-1}$	-0.894***	-0.924***	-0.873***
	(-6.34)	(-6.52)	(-6.19)
Tangibility $_{t-1}$	-0.020	-0.028	-0.014
	(-0.60)	(-0.83)	(-0.42)
Interest coverage $_{t-1}$	-0.049***	-0.049***	-0.048***
	(-5.18)	(-5.19)	(-5.06)
Current ratio $_{t-1}$	-0.011*	-0.011*	-0.010
	(-1.73)	(-1.71)	(-1.58)
Return volatility$_{t-1}$	1.481***	1.542***	1.385***
	(13.41)	(13.80)	(12.38)
Inst. ownership $_{t-1}$	-0.012	-0.052*	-0.012
	(-0.38)	(-1.73)	(-0.39)
Log (Loan size) $_t$	-0.075***	-0.076***	-0.075***
	(-10.50)	(-10.69)	(-10.50)
Log (Loan maturity) $_t$	-0.021**	-0.022**	-0.021**
	(-2.19)	(-2.30)	(-2.16)
Performance pricing $_t$	-0.063***	-0.064***	-0.062***
	(-5.44)	(-5.49)	(-5.34)
Credit spread$_t$	0.220***	0.222***	0.220***
	(8.07)	(8.03)	(8.10)
Term spread$_t$	0.046***	0.047***	0.046***
	(3.48)	(3.51)	(3.47)
Constant	6.604***	6.818***	6.591***
	(49.46)	(52.66)	(50.06)
Year and industry effects	Yes	Yes	Yes
Loan type, purpose and credit rating dummies	Yes	Yes	Yes
N	16546	16546	16546
R^2	0.698	0.697	0.699

Table 3 – *continued*

Panel B. Controlling for Modified Altman Z-score

	(1) Log(AISD)$_t$	(2) Log(AISD)$_t$	(3) Log(AISD)$_t$
LIQRES $_{t-1}$	-6.355***		
	(-6.60)		
LIQAMIHUD $_{t-1}$		-0.050***	
		(-2.73)	
LIQFHT $_{t-1}$			-8.978***
			(-7.58)
Log (Assets) $_{t-1}$	-0.069***	-0.081***	-0.071***
	(-7.17)	(-8.53)	(-7.54)
Market-to-book $_{t-1}$	-0.048***	-0.054***	-0.046***
	(-5.00)	(-5.66)	(-4.83)
Leverage $_{t-1}$	0.263***	0.281***	0.267***
	(4.72)	(5.03)	(4.79)
ROA $_{t-1}$	-0.616***	-0.649***	-0.615***
	(-4.13)	(-4.31)	(-4.12)
Tangibility $_{t-1}$	-0.046	-0.053	-0.038
	(-1.31)	(-1.51)	(-1.09)
Interest coverage $_{t-1}$	-0.048***	-0.048***	-0.047***
	(-5.13)	(-5.14)	(-5.03)
Current ratio $_{t-1}$	-0.007	-0.007	-0.007
	(-1.16)	(-1.13)	(-1.03)
Return volatility$_{t-1}$	1.393***	1.452***	1.307***
	(12.57)	(12.95)	(11.66)
Inst. ownership $_{t-1}$	-0.021	-0.061**	-0.023
	(-0.68)	(-1.99)	(-0.75)
Log (Loan size) $_t$	-0.075***	-0.077***	-0.076***
	(-10.62)	(-10.81)	(-10.64)
Log (Loan maturity) $_t$	-0.024**	-0.026***	-0.024**
	(-2.53)	(-2.64)	(-2.51)
Performance pricing $_t$	-0.064***	-0.065***	-0.063***
	(-5.47)	(-5.52)	(-5.39)
Mod. Altman z $_{t-1}$	-0.042***	-0.042***	-0.039***
	(-4.93)	(-4.87)	(-4.61)
Constant	6.870***	7.082***	6.865***
	(52.53)	(56.00)	(52.90)
Year and industry effects	Yes	Yes	Yes
Loan type, purpose and credit rating dummies	Yes	Yes	Yes
N	16413	16413	16413
R^2	0.698	0.696	0.698

Table 4
Stock Liquidity and Loan Spread: With Firm Fixed Effects

This table reports the pooled OLS regression results with firm fixed effects examining the relationship between stock liquidity and the loan spread. The sample period is from 1994 to 2010. The dependent variable *Log(AISD)* is the natural logarithm of all-in-drawn spread for the loan facility in year *t*. The key independent variable is the stock liquidity of the borrowing firm one year prior to the loan initiation year. The stock liquidity variables in column (1), column (2), and column (3) are *LIQRES*, *LIQAMIHUD*, and *LIQFHT,* respectively. Please refer to the appendix for the detailed definitions of control variables. All variables are winsorized at the 1st and 99th percentiles. T-statistics in parentheses are computed using the robust standard errors clustered by firm. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1) Log(AISD)$_t$	(2) Log(AISD)$_t$	(3) Log(AISD)$_t$
LIQRES $_{t-1}$	-6.384***		
	(-4.01)		
LIQAMIHUD $_{t-1}$		-0.025	
		(-0.80)	
LIQFHT $_{t-1}$			-5.905***
			(-3.54)
Log (Assets) $_{t-1}$	-0.061***	-0.076***	-0.067***
	(-2.85)	(-3.49)	(-3.16)
Market-to-book $_{t-1}$	-0.054***	-0.059***	-0.054***
	(-4.11)	(-4.54)	(-4.06)
Leverage $_{t-1}$	0.172**	0.188**	0.176**
	(2.09)	(2.28)	(2.13)
ROA $_{t-1}$	-0.845***	-0.898***	-0.858***
	(-4.48)	(-4.74)	(-4.53)
Tangibility $_{t-1}$	-0.120	-0.121	-0.121
	(-1.14)	(-1.14)	(-1.15)
Interest coverage $_{t-1}$	-0.037***	-0.037***	-0.036***
	(-2.72)	(-2.75)	(-2.66)
Current ratio $_{t-1}$	-0.014	-0.015	-0.015
	(-1.44)	(-1.50)	(-1.49)
Return volatility$_{t-1}$	0.577***	0.613***	0.553***
	(3.92)	(4.17)	(3.76)
Inst. ownership $_{t-1}$	-0.027	-0.069	-0.043
	(-0.49)	(-1.28)	(-0.79)
Log (Loan size) $_t$	-0.075***	-0.076***	-0.075***
	(-8.68)	(-8.73)	(-8.67)
Log (Loan maturity) $_t$	-0.011	-0.012	-0.012
	(-1.15)	(-1.20)	(-1.17)
Performance pricing $_t$	-0.034**	-0.034**	-0.034***
	(-2.56)	(-2.57)	(-2.58)
Constant	6.804***	7.018***	6.870***
	(34.82)	(37.33)	(35.70)
Year effects	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Loan type and purpose	Yes	Yes	Yes
Credit rating dummies	Yes	Yes	Yes
N	16546	16546	16546
R^2	0.836	0.835	0.836

Table 5
Stock Liquidity and Loan Spread: Instrumental Variables 2SLS Estimation

This table reports the 2SLS regression results examining the relationship between stock liquidity and loan spread. The sample period is from 1994 to 2010. The dependent variable is specified on top of each column. Please refer to the Appendix for the detailed definitions of control and instrumental variables. All variables are winsorized at the 1st and 99th percentiles. T-statistics in parentheses are computed using the robust standard errors clustered by firm. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	1st stage $LIQRES_{t-1}$	2nd stage Log $(AISD)_t$	1st stage $LIQAMIHUD_{t-1}$	2nd stage Log $(AISD)_t$	1st stage $LIQFHT_{t-1}$	2nd stage Log $(AISD)_t$
$Med(LIQRES)_{t-1}$	0.740***					
	(30.04)					
Fitted $LIQRES_{t-1}$		-22.092***				
		(-10.02)				
$Med(LIQAMIHUD)_{t-1}$			0.798***			
			(21.17)			
Fitted $LIQAMIHUD_{t-1}$				-0.346***		
				(-6.87)		
$Med(LIQFHT)_{t-1}$					0.827***	
					(40.00)	
Fitted $LIQFHT_{t-1}$						-22.276***
						(-9.61)
Log (Assets) $_{t-1}$	0.001***	-0.027**	0.052***	-0.052***	0.000***	-0.049***
	(11.42)	(-2.52)	(12.14)	(-4.99)	(6.01)	(-4.98)
Market-to-book $_{t-1}$	0.000***	-0.017*	0.030***	-0.028***	0.000***	-0.023**
	(2.79)	(-1.71)	(6.78)	(-2.80)	(2.85)	(-2.32)
Leverage $_{t-1}$	-0.002**	0.261***	-0.100**	0.291***	-0.001	0.286***
	(-2.57)	(4.55)	(-2.48)	(5.09)	(-1.24)	(5.06)
ROA $_{t-1}$	0.004***	-0.827***	0.047	-0.917***	0.005***	-0.810***
	(2.64)	(-5.84)	(0.59)	(-6.46)	(4.62)	(-5.74)
Tangibility $_{t-1}$	0.000	0.008	0.004	-0.011	0.001*	0.011
	(0.81)	(0.22)	(0.18)	(-0.33)	(1.89)	(0.33)
Interest coverage $_{t-1}$	0.000	-0.045***	0.006	-0.044***	0.000	-0.044***
	(0.11)	(-4.81)	(0.90)	(-4.68)	(1.60)	(-4.68)
Current ratio $_{t-1}$	0.000	-0.009	0.008	-0.007	0.000**	-0.007
	(0.47)	(-1.32)	(1.62)	(-0.98)	(1.99)	(-1.06)
Return volatility$_{t-1}$	-0.007***	1.337***	0.119	1.561***	-0.015***	1.170***
	(-4.33)	(11.86)	(1.30)	(13.42)	(-12.31)	(9.85)
Inst. ownership $_{t-1}$	0.006***	0.128***	0.243***	0.052	0.004***	0.068**
	(16.95)	(3.50)	(12.10)	(1.50)	(15.40)	(2.02)
Log (Loan size) $_t$	0.000**	-0.069***	0.014***	-0.070***	0.000	-0.072***
	(2.10)	(-9.55)	(4.01)	(-9.61)	(1.29)	(-10.09)
Log (Loan maturity) $_t$	0.000	-0.021**	-0.002	-0.024**	0.000	-0.022**
	(0.39)	(-2.21)	(-0.45)	(-2.51)	(0.33)	(-2.30)
Performance pricing $_t$	0.000	-0.057***	0.016**	-0.055***	0.000**	-0.056***
	(0.96)	(-4.76)	(2.31)	(-4.56)	(2.22)	(-4.75)
Constant	-0.015***	6.064***	-0.823***	6.471***	-0.007***	6.333***
	(-9.80)	(36.45)	(-9.50)	(40.47)	(-7.06)	(42.57)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Loan type and purpose	Yes	Yes	Yes	Yes	Yes	Yes

(*continued*)

Table 5– *continued*

	(1)	(2)	(3)	(4)	(5)	(6)
	1st stage $LIQRES_{t-1}$	2nd stage Log $(AISD)_t$	1st stage $LIQAMIHUD_{t-1}$	2nd stage Log $(AISD)_t$	1st stage $LIQFHT_{t-1}$	2nd stage Log $(AISD)_t$
Credit rating dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	16510	16510	16510	16510	16510	16510
R^2	0.732	0.684	0.494	0.683	0.773	0.691
Tests of endogeneity						
Durbin χ^2		181.853***		110.963***		116.698***
Wu-Hausman F-statistic		183.132***		111.261***		117.052***
Weak identification statistics						
F-statistic	902.222***		448.115***		1600.15***	
Partial R^2	0.234		0.163		0.316	

Table 6
Stock Liquidity and Loan Spread: Difference-in-differences Analysis

This table reports the difference-in-differences (DiD) analysis results examining how exogenous stock liquidity changes around 2001 decimalization of tick size impacts loan spread. The initial sample includes all firms with at least one loan initiated in the two years prior to decimalization and two years subsequent to decimalization. Treatment (Control) firms are firms with changes in LIQRES from $t-1$ to $t+1$ above (below) the sample median, where t is the fiscal year during which decimalization occurred. We first identify a control firm for each treatment firm using propensity score matching (nearest neighbor method). The variables used in the probit regression to estimate the propensity scores include all the firm characteristics used in the baseline loan spread regression and industry fixed effects. If a control firm is matched with more than one treatment firm, the pair with the smallest difference in propensity scores between the treatment and control firm is retained. The final sample includes 100 unique matched pairs. Panel A reports the estimated propensity score distributions. Panel B reports the pre-decimalization differences. Panel C reports the DiD univariate results of the change in *AISD* from the two years prior to decimalization to the two years subsequent to decimalization. Panel D reports the DiD results estimated using pooled OLS regression. The dependent variable *Log(AISD)* is the natural logarithm of *AISD* for the loan facility in year *t*. *Treatment* is a dummy variable, which equals one if the firm is a treatment firm and zero otherwise. *After* is a dummy variable, which equals one if the loan is initiated after decimalization and zero otherwise. Please refer to the Appendix for the detailed definitions of control variables. All variables are winsorized at the 1st and 99th percentiles. T-statistics in parentheses are computed using the robust standard errors clustered by firm. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Difference in Propensity Scores

Propensity Score	N	Mean	Min	5th Pctl	50th Pctl	90th Pctl	Max.	Std Dev
Treatment	100	0.523	0.122	0.173	0.477	0.903	0.956	0.218
Control	100	0.524	0.122	0.173	0.480	0.909	0.958	0.220
Difference		-0.001	-0.011	-0.008	0.000	0.002	0.006	0.003

Panel B: Pre-Decimalization Differences

Variable	N	Treatment Mean	Control Mean	Difference	T-statistics
Stock liquidity					
LIQRES	100	-0.007	-0.006	-0.001	-1.15
LIQAMIHUD	100	-0.042	-0.050	0.008	0.43
LIQFHT	100	-0.006	-0.006	0.000	0.54
Firm characteristics					
Log (Assets)	100	7.308	7.274	0.033	0.18
Market-to-book	100	1.567	1.493	0.074	0.72
Leverage	100	0.348	0.339	0.009	0.42
ROA	100	0.152	0.149	0.003	0.25
Tangibility	100	0.380	0.372	0.008	0.23
Interest coverage	100	2.031	1.978	0.053	0.43
Current ratio	100	1.743	1.756	-0.012	-0.08
Return volatility	100	0.148	0.147	0.001	0.12
Inst. ownership	100	0.560	0.606	-0.046	-1.56
Loan characteristics					
AISD	100	129.289	135.870	-6.581	-0.49
Loan maturity	100	34.470	35.455	-0.985	-0.35
Performance pricing	100	0.545	0.518	0.028	0.44
Loan size	100	337282	275569	61713	1.18

Table 6 – *continued*

Panel C: Difference-in-differences Test: Univariate Analysis

	Treatment Group (After - Before)	Control Group (After - Before)	DiD (Treatment - Control)	
	Mean	Mean	Mean	T-statistics
AISD	27.403	55.608	-28.204	-2.21**

Panel D: Difference-in-differences Test: Multivariate Analysis

	(1) Log(AISD)$_t$	(2) Log(AISD)$_t$
Treatment	0.113*	0.116**
	(1.69)	(2.02)
After	0.149	0.045
	(1.13)	(0.37)
Treatment*After	-0.185**	-0.169**
	(-2.50)	(-2.53)
Log (Assets) $_{t-1}$		-0.136***
		(-3.85)
Market-to-book $_{t-1}$		-0.077
		(-1.53)
Leverage $_{t-1}$		0.144
		(0.66)
ROA $_{t-1}$		-0.511
		(-0.93)
Tangibility $_{t-1}$		-0.142
		(-1.21)
Interest coverage $_{t-1}$		-0.122**
		(-2.28)
Current ratio $_{t-1}$		-0.017
		(-0.76)
Return volatility$_{t-1}$		0.866**
		(2.15)
Inst. ownership $_{t-1}$		0.133
		(1.08)
Log (Loan size) $_t$		-0.040
		(-1.54)
Log (Loan maturity) $_t$		0.083***
		(3.11)
Performance pricing $_t$		0.017
		(0.41)
Constant	4.559***	6.232***
	(16.40)	(14.14)
Year effects	Yes	Yes
Industry fixed effects	Yes	Yes
Loan type and purpose	Yes	Yes
Credit rating dummies	Yes	Yes
N	1069	1069
R^2	0.702	0.761

Table 7
Stock Liquidity and Loan Spread: Financial Constraints

This table reports the pooled OLS regression results examining the relationship between stock liquidity and loan spread and the effect of financial constraints on this relationship. The sample period is from 1994 to 2010. The dependent variable *Log(AISD)* is the natural logarithm of all-in-drawn spread for the loan facility in year *t*. The stock liquidity variables in Columns (1), (2), and (3) are *LIQRES*, *LIQAMIHUD*, and *LIQFHT*, respectively. *Constrained* is an indicator variable which equals one if the firm has no debt rating or has a default debt rating ("D" and "SD") and zero otherwise. Please refer to the Appendix for the detailed definitions of control variables. All variables are winsorized at the 1st and 99th percentiles. T-statistics in parentheses are computed using the robust standard errors clustered by firm. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1) Log(AISD)$_t$	(2) Log(AISD)$_t$	(3) Log(AISD)$_t$
LIQRES $_{t-1}$	0.273		
	(0.16)		
LIQRES $_{t-1}$*Constrained	-7.264***		
	(-4.39)		
LIQAMIHUD $_{t-1}$		0.072	
		(1.62)	
LIQAMIHUD $_{t-1}$* Constrained		-0.131***	
		(-2.86)	
LIQFHT $_{t-1}$			-3.151*
			(-1.77)
LIQFHT $_{t-1}$* Constrained			-7.274***
			(-4.21)
Constrained	1.045***	1.044***	1.058***
	(10.21)	(10.22)	(10.26)
Log (Assets) $_{t-1}$	-0.071***	-0.081***	-0.071***
	(-7.34)	(-8.50)	(-7.53)
Market-to-book $_{t-1}$	-0.043***	-0.048***	-0.041***
	(-4.62)	(-5.16)	(-4.41)
Leverage $_{t-1}$	0.341***	0.351***	0.334***
	(6.26)	(6.40)	(6.12)
ROA $_{t-1}$	-0.911***	-0.930***	-0.887***
	(-6.48)	(-6.55)	(-6.30)
Tangibility $_{t-1}$	-0.021	-0.026	-0.013
	(-0.61)	(-0.79)	(-0.38)
Interest coverage $_{t-1}$	-0.045***	-0.047***	-0.045***
	(-4.85)	(-4.98)	(-4.77)
Current ratio $_{t-1}$	-0.010	-0.010	-0.009
	(-1.58)	(-1.53)	(-1.43)
Return volatility$_{t-1}$	1.480***	1.534***	1.386***
	(13.46)	(13.82)	(12.48)
Inst. ownership $_{t-1}$	-0.018	-0.054*	-0.014
	(-0.59)	(-1.78)	(-0.47)
Log (Loan size) $_t$	-0.075***	-0.077***	-0.075***
	(-10.57)	(-10.82)	(-10.59)
Log (Loan maturity) $_t$	-0.023**	-0.025***	-0.023**
	(-2.44)	(-2.59)	(-2.42)
Performance pricing $_t$	-0.059***	-0.062***	-0.058***
	(-5.03)	(-5.25)	(-4.96)
Constant	5.767***	5.987***	5.733***
	(33.90)	(35.84)	(33.88)
Year and industry effects	Yes	Yes	Yes
Loan type, purpose and credit rating dummies	Yes	Yes	Yes
N	16546	16546	16546
R^2	0.696	0.694	0.697

Table 8
Stock Liquidity And Loan Spread: Managerial Pay-for-performance Sensitivity

This table reports the pooled OLS regression results examining the relationship between stock liquidity and loan spread and the effect of performance sensitivity of executive compensation on this relationship. The sample period is from 1994 to 2010. The dependent variable *Log(AISD)* is the natural logarithm of all-in-drawn spread for the loan facility in year *t*. The stock liquidity variables in Columns (1), (2), and (3) are *LIQRES*, *LIQAMIHUD*, and *LIQFHT* respectively. *High WPS* is an indicator variable which equals one if wealth performance sensitivity (WPS) is in the top quintile within each year and zero otherwise. Please refer to the Appendix for the detailed definitions of control variables. All variables are winsorized at the 1st and 99th percentiles. T-statistics in parentheses are computed using the robust standard errors clustered by firm. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1) Log(AISD)$_t$	(2) Log(AISD)$_t$	(3) Log(AISD)$_t$
LIQRES $_{t-1}$	-17.083***		
	(-4.01)		
LIQRES $_{t-1}$*High WPS $_{t-1}$	-11.394*		
	(-1.81)		
LIQAMIHUD $_{t-1}$		-0.390*	
		(-1.76)	
LIQAMIHUD $_{t-1}$*High WPS $_{t-1}$		-1.391***	
		(-3.40)	
LIQFHT $_{t-1}$			-18.115***
			(-4.60)
LIQFHT $_{t-1}$*High WPS $_{t-1}$			-6.952
			(-1.10)
High WPS $_{t-1}$	-0.085**	-0.061**	-0.061**
	(-2.57)	(-2.33)	(-2.03)
Log (Assets) $_{t-1}$	-0.023	-0.035**	-0.027*
	(-1.62)	(-2.48)	(-1.93)
Market-to-book $_{t-1}$	-0.053***	-0.060***	-0.054***
	(-2.79)	(-3.12)	(-2.85)
Leverage $_{t-1}$	0.397***	0.413***	0.387***
	(3.32)	(3.42)	(3.21)
ROA $_{t-1}$	-0.626**	-0.646**	-0.602**
	(-2.28)	(-2.36)	(-2.19)
Tangibility $_{t-1}$	-0.102	-0.104*	-0.092
	(-1.63)	(-1.67)	(-1.47)
Interest coverage $_{t-1}$	-0.047**	-0.049**	-0.048**
	(-2.41)	(-2.45)	(-2.40)
Current ratio $_{t-1}$	-0.012	-0.008	-0.011
	(-0.74)	(-0.52)	(-0.67)
Return volatility$_{t-1}$	1.357***	1.561***	1.329***
	(5.63)	(6.49)	(5.47)
Inst. ownership $_{t-1}$	0.108*	0.052	0.100
	(1.68)	(0.83)	(1.56)
Log (Loan size) $_t$	-0.095***	-0.094***	-0.096***
	(-7.35)	(-7.28)	(-7.43)
Log (Loan maturity) $_t$	0.023*	0.023*	0.024*
	(1.72)	(1.69)	(1.80)
Performance pricing $_t$	0.017	0.019	0.019
	(0.85)	(0.94)	(0.94)
Constant	6.187***	6.418***	6.230***
	(25.67)	(27.25)	(25.98)
Year and industry effects	Yes	Yes	Yes
Loan type, purpose and credit rating dummies	Yes	Yes	Yes
N	6441	6441	6441
R^2	0.719	0.718	0.719

Table 9
Stock Liquidity and Loan Spread: Takeover Exposures

This table reports the pooled OLS regression results examining the relationship between stock liquidity and loan spread and the effect of takeover exposures on this relationship. The sample period is from 1994 to 2010. The dependent variable *Log(AISD)* is the natural logarithm of all-in-drawn spread for the loan facility in year *t*. The stock liquidity variables in Columns (1), (2), and (3) are *LIQRES*, *LIQAMIHUD*, and *LIQFHT*, respectively. *Delaware* is an indicator variable which equals one if the firm is incorporated in Delaware and zero otherwise. Please refer to the Appendix for the detailed definitions of control variables. All variables are winsorized at the 1st and 99th percentiles. T-statistics in parentheses are computed using the robust standard errors clustered by firm. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1) Log(AISD)$_t$	(2) Log(AISD)$_t$	(3) Log(AISD)$_t$
LIQRES $_{t-1}$	-5.699***		
	(-5.35)		
LIQRES $_{t-1}$*Delaware	-1.694		
	(-1.49)		
LIQAMIHUD $_{t-1}$		-0.035	
		(-1.53)	
LIQAMIHUD $_{t-1}$*Delaware		-0.026	
		(-0.89)	
LIQFHT $_{t-1}$			-8.869***
			(-6.34)
LIQFHT $_{t-1}$*Delaware			-1.051
			(-0.75)
Delaware	0.008	0.018	0.014
	(0.44)	(1.18)	(0.79)
Log (Assets) $_{t-1}$	-0.068***	-0.081***	-0.070***
	(-7.01)	(-8.44)	(-7.41)
Market-to-book $_{t-1}$	-0.041***	-0.048***	-0.040***
	(-4.42)	(-5.14)	(-4.25)
Leverage $_{t-1}$	0.327***	0.344***	0.326***
	(5.97)	(6.29)	(5.93)
ROA $_{t-1}$	-0.904***	-0.936***	-0.883***
	(-6.42)	(-6.60)	(-6.27)
Tangibility$_{t-1}$	-0.011	-0.020	-0.006
	(-0.34)	(-0.59)	(-0.19)
Interest coverage ratio $_{t-1}$	-0.047***	-0.048***	-0.046***
	(-5.06)	(-5.10)	(-4.96)
Current ratio $_{t-1}$	-0.010	-0.010	-0.009
	(-1.53)	(-1.51)	(-1.36)
Return volatility$_{t-1}$	1.465***	1.527***	1.369***
	(13.28)	(13.68)	(12.26)
Inst. ownership $_{t-1}$	-0.010	-0.053*	-0.012
	(-0.34)	(-1.74)	(-0.40)
Log (Loan size) $_t$	-0.076***	-0.078***	-0.076***
	(-10.70)	(-10.89)	(-10.69)
Log (Loan maturity) $_t$	-0.025***	-0.026***	-0.025**
	(-2.58)	(-2.69)	(-2.56)
Performance pricing $_t$	-0.061***	-0.062***	-0.060***
	(-5.21)	(-5.28)	(-5.14)
Constant	6.804***	7.022***	6.796***
	(51.69)	(55.09)	(52.26)
Year and industry effects	Yes	Yes	Yes
Loan type, purpose and credit rating dummies	Yes	Yes	Yes
N	16546	16546	16546
R^2	0.696	0.694	0.696

Table 10
Stock Liquidity and Non-price Loan Terms

This table reports the pooled OLS (Panel A) and logistic (Panel B) regression results examining the relationship between stock liquidity and non-price loan terms. The sample period is from 1994 to 2010. Panel A dependent variable *Log(Loan maturity)* is the natural logarithm of loan maturity for the loan facility in year *t*. Panel B dependent variable *Secured* is the dummy variable which equals one if loan facility in year *t* is secured by collateral and zero otherwise. The key independent variable is the stock liquidity of the borrowing firm one year prior to the loan initiation year. The stock liquidity variables in Columns (1), (2), and (3) are *LIQRES*, *LIQAMIHUD*, and *LIQFHT*, respectively. Please refer to the Appendix for the detailed definitions of control variables. All variables are winsorized at the 1st and 99th percentiles. T-statistics or Z-statistics in parentheses are computed using the robust standard errors clustered by firm. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Stock Liquidity and Loan Maturity

	(1) Log(Loan maturity)$_t$	(2) Log(Loan maturity)$_t$	(3) Log(Loan maturity)$_t$
LIQRES $_{t-1}$	1.753*		
	(1.72)		
LIQAMIHUD $_{t-1}$		0.013	
		(0.67)	
LIQFHT $_{t-1}$			2.731**
			(2.24)
Log (Assets) $_{t-1}$	-0.047***	-0.044***	-0.047***
	(-4.85)	(-4.58)	(-4.94)
Market-to-book $_{t-1}$	-0.027***	-0.026***	-0.028***
	(-2.99)	(-2.82)	(-3.11)
Leverage $_{t-1}$	0.065	0.060	0.066
	(1.21)	(1.12)	(1.22)
ROA $_{t-1}$	0.570***	0.581***	0.564***
	(4.69)	(4.78)	(4.64)
Tangibility $_{t-1}$	0.052	0.052	0.050
	(1.06)	(1.04)	(1.02)
Interest coverage $_{t-1}$	-0.021**	-0.021**	-0.021**
	(-2.29)	(-2.29)	(-2.33)
Current ratio $_{t-1}$	0.011*	0.011*	0.011*
	(1.83)	(1.81)	(1.77)
Return volatility$_{t-1}$	-0.070	-0.086	-0.042
	(-0.62)	(-0.75)	(-0.37)
Inst. ownership $_{t-1}$	0.104***	0.115***	0.103***
	(3.36)	(3.80)	(3.40)
Log (Loan size) $_t$	0.098***	0.098***	0.098***
	(11.23)	(11.32)	(11.25)
Performance pricing $_t$	0.183***	0.184***	0.183***
	(14.93)	(14.97)	(14.91)
Asset maturity $_t$	-0.002	-0.002	-0.002
	(-1.22)	(-1.14)	(-1.21)
Constant	1.965***	1.907***	1.974***
	(12.19)	(12.27)	(12.41)
Year and industry effects	Yes	Yes	Yes
Loan type, purpose and credit rating dummies	Yes	Yes	Yes
N	16200	16200	16200
R^2	0.344	0.344	0.345

Table 10– *continued*

Panel B: Stock Liquidity and Likelihood of Collateral Requirements

	(1) Secured $_t$	(2) Secured $_t$	(3) Secured $_t$
LIQRES $_{t-1}$	-2.160***		
	(-2.69)		
LIQAMIHUD $_{t-1}$		-0.038**	
		(-2.38)	
LIQFHT $_{t-1}$			-4.950***
			(-4.58)
Log (Assets) $_{t-1}$	-0.042***	-0.045***	-0.040***
	(-6.54)	(-7.19)	(-6.59)
Market-to-book $_{t-1}$	-0.012**	-0.013**	-0.010*
	(-2.08)	(-2.28)	(-1.67)
Leverage $_{t-1}$	0.168***	0.170***	0.162***
	(4.24)	(4.29)	(4.09)
ROA $_{t-1}$	-0.227***	-0.233***	-0.214***
	(-2.79)	(-2.87)	(-2.65)
Tangibility $_{t-1}$	-0.058**	-0.059**	-0.055**
	(-2.23)	(-2.29)	(-2.13)
Interest coverage $_{t-1}$	-0.018***	-0.018***	-0.017***
	(-2.95)	(-2.97)	(-2.82)
Current ratio $_{t-1}$	-0.012***	-0.012***	-0.012***
	(-2.88)	(-2.85)	(-2.89)
Return volatility$_{t-1}$	1.035***	1.065***	0.995***
	(11.57)	(11.78)	(11.08)
Inst. ownership $_{t-1}$	0.006	-0.000	0.013
	(0.26)	(-0.02)	(0.56)
Log (Loan size) $_t$	-0.020***	-0.020***	-0.019***
	(-3.95)	(-3.98)	(-3.88)
Log (Loan maturity) $_t$	0.037***	0.037***	0.037***
	(5.27)	(5.25)	(5.29)
Performance pricing $_t$	-0.062***	-0.063***	-0.061***
	(-6.72)	(-6.77)	(-6.57)
Year and industry effects	Yes	Yes	Yes
Loan type, purpose and credit rating dummies	Yes	Yes	Yes
N	11619	11619	11619
Pseudo R^2	0.434	0.434	0.436